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appears to be entitled to the name **Sequoia Haydenii** (*Hypnum Haydenii* Lesq. Ann. Rept. U. S. Geol. and Geog. Surv. Terr. 1874: 309. 1876; *Sequoia affinis* Lesq. *l. c.* 310).

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## REVIEWS

Two recent Papers by O. F. Cook

"*Origin and Evolution of Angiosperms through Apospory.*"\*

It is suggested in this paper that the phylogeny of the angiosperms is not to be sought from the bryophytes, up through the cycadofilices, but "more directly in some such primitive condition as the thallose liverworts." The female reproductive apparatus of the angiosperms would thus be considered analogous (homologous?) to the fern prothallia that are borne directly upon the sporophyte without the intervention of spores.

*Anthoceros* is named as the most probable hepatic ancestor of the angiosperms, since it is held to be, in point of structure, "farther advanced than the ferns in the direction of the angiosperms. . . . The independent existence of the vegetative *Anthoceros* capsule would afford a plant like a seedling angiosperm with its two cotyledons, but bearing spores on the inner surfaces of the cotyledons. No steps are required which have not been closely paralleled in the evolution of one or another of the archegoniate plants. . . . The part of the angiosperm which, in the present view, might correspond to the prothallus itself, is the nucellus."

"The fern and the flowering plant are alike in that their ancestors can be traced back to the capsules of simple thallose plants like *Anthoceros*, but there appears to have been at some very remote point a divergence of procedure, the group which gave rise to the ferns and gymnosperms retaining for a much longer period a functional prothallus which the adoption of apospory enabled the ancestors of the angiosperms to completely eliminate."

\* Cook, O. F. Proc. Wash. Acad. Sci. 9: 159. 1907.

In this connection it will be recalled that in 1891 Atkinson suggested that the embryo-sac is to be interpreted as a female prothallus, originating from the nucellus by apospory, but that there is not, therefore, to be inferred any phylogenetic connection with earlier forms, nor that the process of aposporous origin of the gametophyte is continuous through the groups of plants.

*"Mendelism and Other Methods of Descent."*\* This paper is an elaboration of a discussion of Davenport's lecture on "Heredity and Mendel's Law," delivered before the Washington Academy of Sciences, on February 26, 1907. It is contended that, "the definite mathematical relations which appear in a Mendelian experiment arise from the methods of reproduction rather than from the methods of inheritance," and that the inferences as to the existence of character-unit-particles and the purity of germ cells are rendered entirely unnecessary by the interpretations which the author gives to the experimental results of others.

Descent and heredity are by no means synonymous. There are outlined twenty-two different methods of descent, of which heredity is one, mutation another, and Mendelism another. "Heredity, in the more definite sense, is a fact, but only under conditions of restricted descent." Mendelism is not a form of heredity, but "constitutes a rather wide departure from the primary concept of heredity." It is "one of the methods of descent in which unlike produce unlike." According to Cook, there has been a complete failure, thus far, to demonstrate the Mendelian principles. The terms hybrid and cross seem (p. 223) to be considered as synonyms.

Although artificial selection has been satisfactorily practiced in horticulture for decades, the author declares that, "generally speaking, the cells which compose the bodies of the higher organisms do not leave any descendants to perpetuate their characters." Mutation and Mendelism "are not phenomena of evolution, but of degeneration," and, "when the distinction between discontinuous variation and discontinuous evolution is once appreciated, it will become apparent that the mutation theory

\* Cook, O. F. Proc. Wash. Acad. Sci. 9: 189. 1907.

and the Mendelian 'laws' which have been enlisted in its support are assumptions which the facts do not warrant."

Here certainly is a challenge that, to say the least, cannot be considered wavering or indirect. Without discussing these iconoclastic ideas, it may be remarked that the author's conclusions are diametrically opposed to the inferences of practically every investigator who has derived his knowledge of the facts at first hand.

C. STUART GAGER.

#### FIELD MEETINGS OF THE TORREY BOTANICAL CLUB, SEASON OF 1907

Below is a list of the field meetings of the Club during the present season, as announced by the field committee. In a few cases, the program was not carried out on account of unfavorable weather.

- May 4. West Orange, N. J. Guide, Mr. P. Wilson.
- May 11. Great Notch, N. J. Guide, Mr. Frederick K. Vreeland.
- May 18. Hempstead, Long Island. Special excursion for violets. Guide, Miss Fanny A. Mulford.
- May 25. Mount Kisco, N. Y. Guide, Dr. P. A. Rydberg.
- May 30. Avon, N. J. Guide, Mr. P. Wilson.
- June 1. Long Beach, Long Island. Guide, Dr. R. M. Harper.
- June 8. Mountain Station, N. J. Guide, Mr. William H. Smith.
- June 15. Scarsdale, N. Y. Special excursion for fungi. Guide, Dr. W. A. Murrill.
- June 22. West Orange, N. J. Guide, Mr. R. C. Benedict.
- June 29. New York Botanical Garden and vicinity. Special subject: "The Care and Protection of Trees." Guide, Dr. C. Stuart Gager.
- July 1-7. Fourth Botanical Symposium. Joint meeting of the Torrey, the Philadelphia, and the Washington Botanical Clubs. Newton, Sussex County, N. J. Reported in *TORREYA* for August by Dr. Philip Dowell.
- July 13. Central Park, New York City. Guide, Dr. E. B. Southwick.